REMARKABLY LOW HUMIDITIES ALOFT OVER SAN DIEGO, CALIF.

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Several remarkable aerographical observations of abnormally low relative humidities were made during the month of June, 1932, at the naval air station, North Island, San Diego, Calif.

As is generally known, there is an inversion of temperature during the warmer months of the year along the California coast, where records made during the last 10 years show that almost invariably the temperature decreases to some point usually found within the first 2,500 feet of elevation. Above this point there is an increase which averages about 13° F., but which may be as much as 25° F. or 30° F., and which usually culminates near the 3,800-foot level.

The unusual features of the observations made in June 1932, however, were not connected with the temperatures but with the relative humidities. On 7 days the aerograph recorded relative humidities under 4 percent, and on 3 days 0 percent, or absolute dryness, was shown. On the morning of June 22, the corrected trace sheet gave readings of 0 percent at all levels from 8,000 to 10,000 feet.

Low humidity readings are found as a rule in the inversion layer, but these are the lowest ever recorded either at the surface or in the upper air at this air station and to my knowledge establish a new record for any place.[1]

Care is always taken at the air station to check the aerograph before and after each flight, and we are assured that the instrument was carefully calibrated a short time before the observations. Further proof of the accuracy of the instruments is offered by the almost simultaneous observations made by the aircraft squadrons, Battle Force. Both temperature and humidity records corresponded closely to those made at the air station, and zero relative humidities were also found.

The accompanying table shows the temperature, relative humidity, wind direction and wind velocity for each 1,000-foot level for the four days, June 13, 15, 21, and 22. Wind data are for the soundings nearest the time of the aerographical flight.

[1] Zero humidity was recorded with carefully checked apparatus at Angora, Turkey, May 9, 1926, and Sept. 30, 1926. Met. Zeit., v. 47, pp. 74-75, 1930.—*Editor.*

Temperatures, relative humidities, and winds aloft for June 13, 15, 21, and 22, 1932

Levels (feet)	June 13			June 15			June 21			June 22		
	Temperature	Relative humidity	Wind	Temperature	Relative humidity	Wind	Temperature	Relative humidity	Wind	Temperature	Relative humidity	Wind
	°F.	Percent	M.p.h.	°F.	Percent	M.p.h.	°F.	Percent	M.p.h.	°F.	Percent	M.p.h.
Surface	66	74	WNW. 15	64	64	W. 10	65	70	W. 8	66	78	WNW. 9.
1,000	61	80	NW. 6	59	74	WSW. 6	61	84	NW. 7	63	87	NNW. 4.
2,000	58	87	NNW. 5	55	84	W. 3	72	22	NNW. 10	71	51	NNE. 6.
3,000	63	54	NW. 8	50	93	SW. 9	77	11	NNW. 7	80	16	NNW. 14.
4,000	68	24	NW. 7	54	60	WNW. 15	81	2	N. 6	78	13	NNW. 14.
5,000	69	14	NW. 7	58	26	WNW. 15	79	1	NE. 4	76	10	NW. 9.
6,000	68	9	NNW. 6	59	20	WNW. 14	74	1	ENE. 4	75	6	WNW. 9.
7,000	68	5	NNW. 5	55	19	WNW. 15	70	2	SE. 4	75	3	W. 12.
8,000	67	2	WNW. 7	53	14	WNW. 15	62	2	SSW. 6	73	0	W. 7.
9,000	64	1		51	8		61	3		68	0	
10,000	61	0	WSW. 15	49	4	W. 19	61	1	S. 8	63	0	W. 8.
11,000				47	2					57	0	
12,000			SSW. 16	45	0	W. 25			S. 11			W. 6.

Weather maps for the 4 days show the usual summer-pressure situation over the Southwest and the Pacific Ocean just west of southern California; namely, a semipermanent thermal low barometric area over the interior with extension of isobars into the great valleys of California on June 13, 21, and 22, and a weak development of the north Pacific high area over the ocean. Other than this, the maps show little else in common in the pressure distribution over the far West.

Temperatures and relative humidities aloft over Sunnyvale, Calif., for July 10, 27, 31, and Aug. 19, 1931

[Authority, U.S. Navy Aerographer]

AEROGRAPHIC FLIGHT OF JULY 10, 1931

[No time given]

Altitude (meters)	Temperature	Relative humidity	Altitude (meters)	Temperature	Relative humidity
	° C.	Percent		° C.	Percent
Surface	24.4	57	1,905	20.6	0
193	22.6	28	2,409	17.9	0
1,016	24.8	5	3,129	13.6	4

AEROGRAPHIC FLIGHT OF JULY 27, 1931

[At 11:30 a.m.]

Surface	21.8	59	1,951	26.8	0
305	16.8	71	2,875	22.0	0
630	24.8	34	3,454	18.8	0
1,361	28.3	1			

Temperatures and relative humidities aloft over Sunnyvale, Calif., for July 10, 27, 31, and Aug. 19, 1931—Continued

AEROGRAPHIC FLIGHT OF JULY 31, 1931

[At 11:05 a.m.]

Surface	20.0	66	1,575	21.2	18
503	14.4	77	1,910	19.0	11
1,204	23.0	12	3,261	14.2	0

AEROGRAPHIC FLIGHT OF AUG. 19, 1931

[At 9:58 a.m.]

Surface	21.7	62	1,920	20.6	4
356	17.1	76	2,885	11.5	0
1,057	24.1	13	3,241	8.5	0

On each of the days the morning hours at San Diego were characterized by the customary stratus layer which dissipated between 9 and 10 a.m. on June 13 and 15, and between 7 and 8 a.m. June 21 and 22. The 15th and 21st remained clear, but cirrus and altocumulus clouds, moving from the west, prevailed the rest of the 13th, and cirrostratus clouds, moving from the southeast, were observed after the stratus cleared on the 22d.